

Water Walk



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Purpose

To become familiar with the hydrology of your locale

Overview

Students will study and visit the Hydrology Study Site, conduct a visual survey to discover information about local land cover, water quality, and document their findings. They will use this initial investigation to raise questions about local land cover and/or water chemistry issues that may require further investigation.

Student Outcomes

Students will learn different methods for finding out about a study site, such as through library research, field visits, and interviews.

Science Concepts

Earth and Space Science

Soils have properties of color, texture and composition; they support the growth of many kinds of plants.

Landforms are the result of destructive and constructive forces.

Soils consist of weathered rocks and decomposed organic matter.

Water circulates through the biosphere, lithosphere, atmosphere and hydrosphere (water cycle).

Water is a solvent.

Each element moves among different reservoirs (biosphere, lithosphere, atmosphere, hydrosphere).

Life Sciences

Organisms can only survive in environments where their needs are met.

Earth has many different environments that support different combinations of organisms.

Organisms change the environment in which they live.

Humans can change natural environments.

All organisms must be able to obtain and use resources while living in a constantly changing environment.

Scientific Inquiry Abilities

Identify answerable questions.

Develop descriptions and explanations using evidence.

Recognize and analyze alternative explanations.

Communicate procedures and explanations.

Time

Field trip time plus 2-3 class periods

Level

All

Materials and Tools

Drawing materials for making sketches of the site

Compass

Measuring tape

Other suggested materials: camera or video recorder, plant and animal guides, binoculars

Preparation

Begin to collect materials pertaining to your Hydrology Site, such as:

Topographic and other maps

Satellite imagery of your study site

Newspaper articles, etc. about local water issues

Local animal and plant guides

Invite local experts on water issues to visit your classroom (optional).

Prerequisites

None



Background

Your body of water is part of a catchment basin. A watershed delineates the area drained by a river and its tributaries or other body of water. The area within a watershed is called a catchment basin. The topography of the area determines the shape of the watershed and catchment basin. The surrounding land cover of this land, such as towns, highways, agricultural, grasslands and forests influences the water chemistry of bodies of water within the watershed.

Many factors can affect the characteristics of the water in a river system, lake, or pond. Characteristics of water *system* include shape, depth and area of the water body, nearby land cover, and the types of rocks and soils near the water body, shape and area of the catchment basin. Characteristics of your water include temperature, chemistry, color, etc. In this protocol, you will be collecting data about water quality as measured by dissolved oxygen, pH, alkalinity and electrical conductivity. Background research and field observations increase the students' ability to conceptualize links between land characteristics and water characteristics. This activity is an introduction to your Hydrology Site.

What To Do and How To Do It

Ask students about their knowledge of local bodies of water. Begin with questions such as:

Is there a lake, river, pond or stream that you visit?

What is your favorite past-time at this place?

Why is this body of water important to you?

Have students begin to research local water sites and water issues in your community. This may include:

Looking at maps of the local area to identify water sites,

Researching water in the community through newspaper articles, periodicals or books; reports from local, state, or federal agencies; or other written sources,

Interviews with long-time residents of the community about what they remember about your Hydrology Site, and

Discussions with local experts on water from local agencies or universities.

Take a Field Trip to your Hydrology Site

For beginning levels:

For the younger students, the goal is to have the students walk around, observe and ask questions about the water in their study site. This includes noticing the direction of flow of rivers or streams, the presence of ponds or lakes, residual water from precipitation, springs and soil moisture. Encourage your students to focus on water in all its forms as they walk around the study site. Take a container and collect a sample of the water. Ask students to observe the color of the water, what they see in the water, whether the water is moving and how fast, what is near the water, whether they can hear the water while they are quiet, whether the water has a smell, whether the water is clear or cloudy, etc.

Have your students draw pictures and/or take notes about the location and size of the study site. Compare the water location to other features on their study site such as trees, hills, etc. Have your students ask questions about where the water came from.

For intermediate and advanced levels:

Assign teams of students to survey different sections of the Hydrology Site. In teams composed of a journalist, a sketcher, and a photographer, students should begin to document what they observe about their section. What is the appearance, smell, nature of the water in their section? Bordering lands should be noted such as urban, agricultural, residential, wooded, and wetlands. Students should map the general contours and characteristics of their sections and record the wildlife and plants in and around its water. What is the slope of the land adjacent to their section of water?

Back in the classroom, students should create a composite display of all the sketches and maps. Look for similarities and differences and discuss observed patterns. Based on their observations, encourage students to think about how the water

got to this location, how it flows through the study site, where it goes from there, how the area surrounding the water influences the properties of the water particularly during periods of rain, snowmelt, and flooding. What questions do they have? Record them on a poster on the classroom wall.

In addition, ask the students to discuss some of the following:

Did you see any discharge into your water body?

What land use activities did you observe and list?

How do you think these activities would change the water characteristics?

Would these activities influence water properties?

What type of water appearance was recorded most often and what might this indicate about the water?

Was there evidence of human uses of the water?

Is there evidence of wildlife and other animals using the water?

Extensions of Basic Learning Activity

As students visit the site weekly to collect data, remind them of their observations during this activity and ask them to note changes in their GLOBE Science Logs.

The information that students gather can become an important archive for the community. Have students use the information, pictures, and other things they have gathered to create a permanent archive for the school about their local water.

Students can create a 'natural history museum' in a display case from the information they have gathered.

Student Assessment

Have students create a visual display of what they know about their body of water, including surrounding land cover and its impact on the water in ways that affect plants, fish, and other animals that depend on the water.